

place has been rather neglected. Perhaps the most valuable coconut estate in the country is that of Mr. W. H. Wright at Mirigama which is already coming into liberal bearing with the trees seven years old. Mr. Wright would not sell this property at any price under R600 an acre. But then he has given the greatest possible justice to his palms in selection, planting and cultivation. We hear from the Kurunegala district very good accounts of the prospects of the coconuts on the Delgolla estate. There have been fine rains on the place and in two years' time, it is said the palms on this estate will be very fine. There can be no doubt that as a permanent investment in Ceylon, nothing approaches the coconut palm under suitable conditions; and the Ceylon Tea Plantations Coy., Ltd. have shown a wise example in investing their surplus funds in "coconuts" under the direction of so experienced a veteran as Mr. Wm. Jardine.

FIBRES:—RAMIE AND NEW ZEALAND FLAX.

In view of the reported glut in the European markets, it seems superfluous to write about fibres. And yet what can be the meaning of the activity we notice in the Australian Colonies and also in forming Companies even in England? Indeed, we may suppose that fibre production is ere long to attract increased attention in Ceylon, if it be true that a Company has been formed in London (with Mr. Digby among the Directors) to promote the cultivation and manufacture of ramie more particularly in this island. So far as production is concerned, this country may well be considered to be a paradise for fibre plants: the question hitherto has always been how to secure the profitable extraction of the fibre. From a paper recently published in the *Australasian* we extract some information bearing on this point and also a reference to New Zealand flax which grows well in the hill country of Ceylon—specially on the Uva side:—

CULTIVATION.

The planting and cultivation of rames, or rhea, resembles somewhat that of the raspberry, and the plant is also similar in appearance and manner of growth. Plants are set out in rows at convenient distances for working the land. They are placed in rows about 15 in. apart; these soon become one continuous course of young canes, and they may be cut 12 to 18 months from time of planting, and, with proper cultivation and attention, should give two or three cuttings annually. According to some experiments made with the plants by the firm referred to, one hundred stalks with leaves weighed 32 lb., which yielded, when stripped of foliage, 16 lb.; when decorticated and the fibre separated from the woody portion of the stalk, there remained 1 lb. 7½ oz. of green decorticated fibre. After the final treatment there were 10 oz. of dressed fibre, and, according to these experiments, the yield per acre would be about 2,235 lb. of good fibre and 395 lb. of tow. The good fibre is estimated at 4d. to 5d. per pound, the two at 2d., and, according to the prices named—4d. for good fibre and 2d. for tow—the returns per acre would be £40 10s. This fibre is one of the strongest known. It has many times the strength of hemp, and is said to withstand a greater jerking strain than a steel strand of the same thickness. It is grown largely in China, Japan, and also India to a more limited extent. It is known in the trade as Chinese grass. It is largely used at present for adulterating silk fabric, and enters into competition with the finer class of cotton material. The price debars it from coming into a more general use. The opinion of those who are most acquainted with the various fibres is that, when more perfect machinery is available, rhea will become one of the most valuable commercial vegetable products we have. It can be propagated in various ways, either by

seed, cuttings, or shoots; the latter is the most general, and those who are entering into the cultivation of fibre will do well to secure a few sets, and gradually extend their area from these. The market at present is limited, and it would be advisable to work cautiously, as these engaged in the manufacture of the fibres are cautious in departing from the usual lines, as it is a serious matter for them to make alterations in the expensive machinery which is found in those manufacturing establishments.

In many parts of America ramie is cultivated to a limited extent, but the trouble which is met with there is also found here, namely, the want of proper machinery for treating the product in a more expeditious manner. According to the returns of the Patents Office of the United States there have been upwards of 300 patents registered recently for the treatment of this and other fibre-producing plants. Many of these have considerable merit, but cannot be said to reach that stage of perfection that is desired.

One machine used in Australia is known as the "Keir," and is capable of treating 500 lb. of decorticated fibre at a single operation, and of being charged twice per day of eight or ten hours.

Then as regards New Zealand Flax (*Phormium tenax*) we are told:—

METHOD OF PLANTING.

From the root system of the plant each shoot strikes out from the parent root and forms, as it were, a perfect system within itself. In planting out each one of these forms a set or plant. The number taken from each depends on the variety, and also as to whether it is intended to destroy the parent plant or not. It is a good system to have one known variety planted, as the class of fibre produced will probably be of a more uniform quality, and also the treatment will be more easily carried out; and where the parent plants can be allowed to remain it is wise to do so. The system adopted by those who have planted differs somewhat, but the following may be taken as a criterion. It is given by a Mr. Hirst, who has planted out 24 acres. He states as follows:—"The flax is planted in rows 6 ft. apart, with a space for carting of 10 ft. at every fourth row. Three plants are placed in each hole, well rammed, and the holes are 6 ft. apart. The contract for digging the holes and planting—the ground having been previously cleared, but not ploughed—was 9s 6d per 100 holes. The plants cost 6s. per hundred for procuring, and were gathered under the direction of an experienced gardener, who devoted some time to attaining a knowledge of his business." The returns from a plantation of New Zealand flax depend on conditions. If these be favourable a small return may be expected in two or three years from planting, but it should continue to increase for several years.

CUTTING.

In cutting, the centre of the plant is usually left, and only the outside or matured leaves taken. This course should be recommended, as when the plant is deprived of all foliage its growth is seriously checked, and sometimes totally destroyed. Many useful experiments are recorded as to the effect of cutting, and the universal opinion is that the plant should not be deprived of all its foliage for the reason given. The usual price paid for cutting the leaves is from 10s to 12s per ton of green leaves, but much depends on the condition or character of the crop worked on. As we have before stated, the flax is gathered from self-sown crops principally, and where this is found evenly grown the labour of gathering is much less than if scattered or intermixed with defective samples.

The after-treatment of the raw product is one that has given considerable trouble and anxiety to the New Zealanders, and does so to the present day. The fibre is one that is capable of being brought to a very fine state, and may be worked up in many forms, even to the spinning of coarse, strong clothing, but little of this class of material is manufactured from it, its chief use being that of cordage making. The method of extracting the fibre from the raw material differs

somewhat from those plants previously described. The long green stems are subject to a bruising, which crushes and liberates the strands. The mucilage which binds these together is washed away. There are many methods in use for accomplishing this, and as before stated, inducements are held out for their improvement, which no doubt, will be done.

As we have stated above, New Zealand flax grows in our hill-country, especially on the Uva side, as freely as do aloes. With reference to the latter—in which Mauritius does a considerable trade—it may be well to quote the following portion of the papers published the other day in the *Government Gazette* merely premising that *Fourcroya gigantea* is one of the ordinary aloes for nearly known as the *Agave foetida* :—

Answers to queries respecting machines in use at Mauritius for extracting fibres from leaves of *Fourcroya gigantea*.

(1) The machine in general use in this Colony is a drum of 2 ft. in diameter by 1 ft. in width, upon which are bolted blades in 2-inch L. steel, and which revolves at a great speed, the blades passing close to a guide in cast iron ("servante"). The machine is called a "gratte" scraper. It is manufactured in the Colony by all engineers' shops, but chiefly by the "Forgers et Fonderies de Maurice."

(2) The weight of the drum is about 4 cwt., the cost, including the driving pulley and bolts (exclusive of framework, masonry, and setting), is about R250 per "gratte."

(3) This grate has been in general use in Mauritius for the last six years.

(4) The machine is worked by steam or by water power.

(5) The registered horse-power to drive one grate is 3 h.p.

(6) One grate is served by two men who stand on each side of the grate, and who work alternately. One of them must be left-handed. One carrier will bring in sufficient leaves from the yard to the grate, and another man will suffice to remove the wet fibre produced by two grattes and to carry this fibre to the weighing machines and thence to the clearing pits.

(7) The output of wet fibre for each machine per hour is on an average, 42½ kilog., that is taking eight hours' work per day, which is as much as the men can do, the work being very fatiguing.

(8) The output per day of eight hours is per machine (gratte) 340 kil. wet supplying on an average 97 kil. of dry fibre (or 28½ per cent of the wet fibre).

(9) The average cost in labour, fuel, &c., in clearing a ton of dry fibre, packing and transporting to the place of shipment is R150.

If to the above we add other charges, viz., collecting leaves, carting, mill management, interest on capital, &c., say about R75.

The total average cost of one ton of fibre ready for shipment is R225.

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Acting Surveyor-General, Mauritius

Feb. 17th, 1890.

THE KOLA NUT.

[We commend the following extract from "Naval and Military Notes," in the Journal of the United Service Institution for August 15th, to the attention of our planting readers.—Ed. T.A.]

The "Revue du Service de l'Intendance" for June, 1894, contain an interesting note, by Dr. Gustave le Bon, on the properties of the kola nut, well worth the study of soldiers and travellers. The nut grows along a belt of Central Africa extending from the west coast up to the head waters of the Nile, and its extraordinary qualities in conferring endurance and practical immunity from thirst have been long known to the natives of those parts, but have only recently become known to Europeans.

Interesting details as to the degrees of resistance to hardship and power of prolonged labour developed by its use will be found in the report of the British Consul at Bahja for 1890, from which Dr. le Bon

quotes the following instance: "A sack of sugar weighing 200 lb. rejected as too heavy by the young Brazilian porters, was picked up with ease by an aged African accustomed to the use of the nut, and carried by him for 12 miles in the day." Further very remarkable information is also to be obtained in the monograph of Professor Heckel, of the School of Medicine at Marseilles, on the African kolas, a work of 400 pages, published in Paris, 1893. Experiments made in Europe hitherto have given divergent, and frequently unsatisfactory results, owing mainly to the fact that the only nuts available commercially for the purpose reach us in a dried condition, and the natives, trading on the ignorance of the buyers, adulterate their consignments with so-called "false" kola nuts, which possess no special properties whatever. Another cause of difficulty arises from the ignorance of European chemical experts as to the real nature of the chemical basis of the nut. Broadly speaking caffeine and theobromine are its essential characteristics, and the restorative qualities of caffeine being well known, it has been assumed that this is the active principle of the stuff. Dr. le Bon shows that this is not the case. According to his experiments, neither caffeine nor theobromine alone gives the required results, a mixture of the two, in the proportion by weight of five of the former to one of the latter, are required for the purpose, and these give results at least equal to those of the fresh nut.

M. Heckel started a Company to manufacture kola biscuits of sugar and flour, but the Company has since gone into liquidation, and Dr. le Bon states that he is not surprised, as these biscuits had "an gout detestable." It appears that these are the biscuits used by Messrs. Conway and MacCormie in the Kharakorum, and also recommended in the "Travellers' Guide," published under the auspices of the Geographical Society.

Dr. le Bon's advice is to import fresh nuts, properly selected, direct from the West Coast, and suggests that no difficulty exists to this proceeding; he has done so himself, and obtained his nuts at a cost of 3 francs per kilo, using, as sole, precaution, a packing of moist leaves. Our own experiments have been made with the ordinary dried nut of commerce, or with the various alcoholic extracts of the nut to be obtained from any chemist. Like Dr. le Bon, we have found considerable irregularity in the results, but in the great majority of cases the nut has thoroughly satisfied our anticipations, having enabled us to accomplish marches over mountainous ground, and without food or water, which were absolutely beyond our unaided physical capacity. As it was suggested by friends in the A.M.S. that these results were merely due to the aid of imagination, prolonged experiments were carried out on horses and ponies, and these animals responded to the stimulus more markedly than human beings. As matters now stand, we should prefer the fresh nut if available, but in its absence would much rather rely on the ordinary nuts and preparations to be obtained at the Army and Navy Stores, than on any other concentrated food preparations with which we are acquainted, and we have tried most of them. Arrangements are now being made for a consignment of these nuts, fresh, and selected by experts on the spot, and we shall be glad to afford every aid in our power to officers interested in the matter.

NYASALAND (B. C. AFRICA).

The London Times of Sept. 15th has a long account of the country now being visited by Mr. J. H. Carson and also later probably by Mr. E. Woodhouse, from which we quote as follows:—

The whole of British Central Africa, with the exception of the land immediately adjoining Lake Nyasa, the Shire River, and Lake Shirwa, consists of highlands, or mountainous masses, intersected by rivers and watercourses, and studded with villages. The highlands are practically undulating plateaus, broken by mounds, hills, and lofty peaks. Most of this hilly